

Name: Solutions

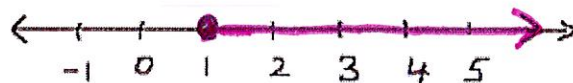
1. Write the graphed number set in both **inequality** and **interval** notation.

3pts

Inequality Notation: $x \geq 1$

4pts

Interval Notation: $[1, \infty)$



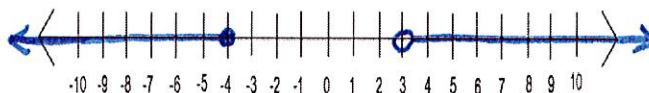
2. Write the graphed number set in both **inequality** and **interval** notation.

4pts

Inequality Notation: $x \leq -4$ or $x > 3$

4pts

Interval Notation: $(-\infty, -4] \cup (3, \infty)$



3. Write the graphed number set in both **inequality** and **interval** notation.

4pt

Inequality Notation: $-1 < x \leq 4$

4pt

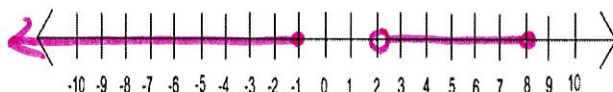
Interval Notation: $(-1, 4]$



4. Graph the set of numbers $(-\infty, -1] \cup (2, 8]$ and write the set in inequality notation:

4pts

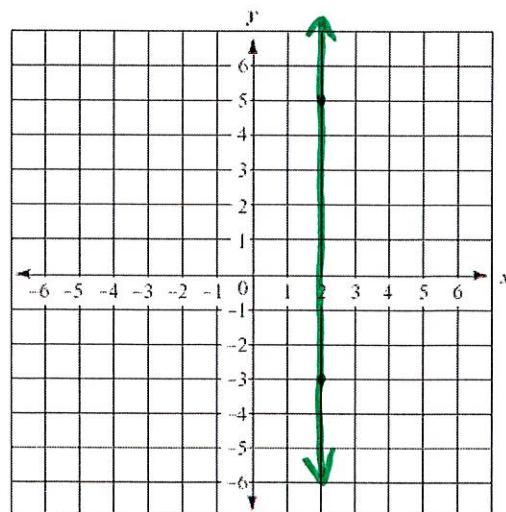
$x \leq -1$ or $2 < x \leq 8$



5. Graph the line with points $(2, 5)$ & $(2, -3)$, and determine an equation of the line.

4pt

$x = 2$



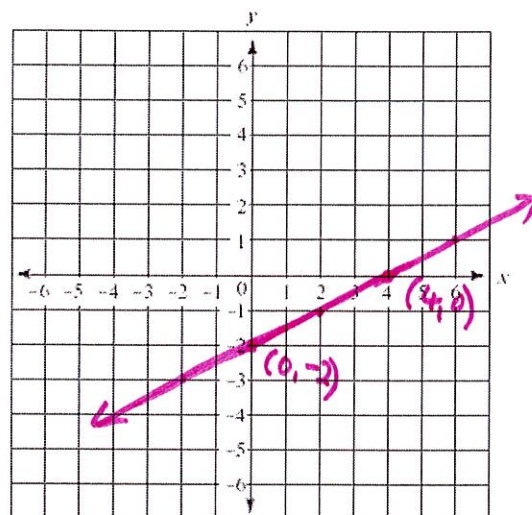
4pt

6. Graph $2x - 4y = 8$ (plot several points and draw your line neatly)

$$\begin{aligned} x=0 \quad 2(0) - 4y &= 8 \\ -4y &= 8 \\ y &= -2 \quad (0, -2) \end{aligned}$$

$$\begin{aligned} y=0 \quad 2x - 4(0) &= 8 \\ 2x &= 8 \\ x &= 4 \quad (4, 0) \end{aligned}$$

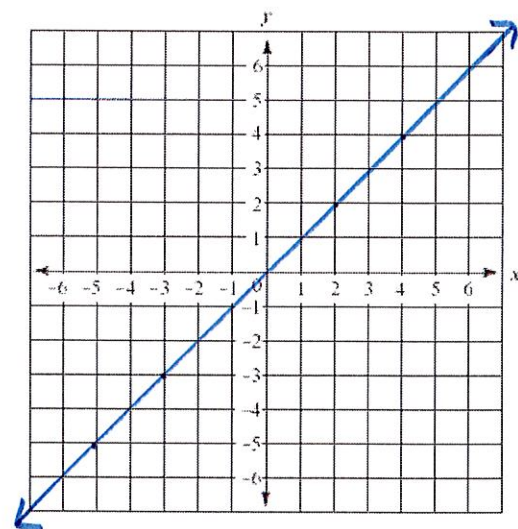
$$\begin{aligned} -4y &= -2x + 8 \\ y &= \frac{-2x}{-4} + \frac{8}{-4} \\ y &= \frac{1}{2}x - 2 \end{aligned}$$



4pt

7. Given the line shown, write an equation in the most appropriate form or the form that applies.

$$y = x$$



5pt

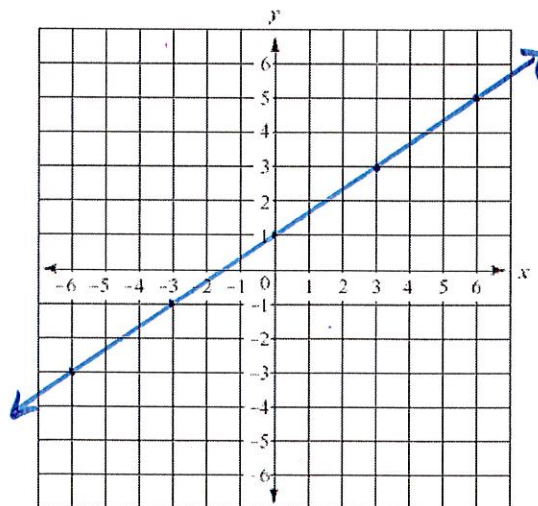
8. Given the line shown, write an equation in slope-intercept form $y = mx + b$ first, then convert the equation to standard form $Ax + By = C$

$$y = \frac{2}{3}x + 1 \text{ slope-intercept}$$

$$3y = 2x + 3$$

$$-2x + 3y = 3$$

$$2x - 3y = -3 \text{ standard form}$$



- 5pt 9. Given a line containing the points $(-3, 5)$ and $(9, 1)$, find an equation of the line in point-slope form first, then convert the equation to slope-intercept form.

$$\text{slope } m = \frac{5-1}{-3-9} = \frac{4}{-12} = -\frac{1}{3}$$

$$y - 1 = -\frac{1}{3}(x - 9) \text{ point-slope}$$

$$y - 1 = -\frac{1}{3}x + 3$$

$$y = -\frac{1}{3}x + 4 \text{ slope-intercept}$$

- 4pt 10. The two given equations represent lines. Are the lines parallel or Perpendicular or neither? Explain briefly why. $3x - 4y = -4$ & $-6x + 8y = -24$

$$3x - 4y = -4$$

$$-4y = -3x - 4$$

$$\frac{-4y}{-4} = \frac{-3x}{-4} - \frac{4}{-4}$$

$$y = \frac{3}{4}x + 1$$

$$-6x + 8y = -24$$

$$8y = 6x - 24$$

$$\frac{8y}{8} = \frac{6x}{8} - \frac{24}{8}$$

$$y = \frac{3}{4}x - 3$$

The lines are parallel since the slopes are equal

- 4pt 11. Line A has equation $y - 7 = \frac{1}{5}(x + 3)$. Line B contains the point $(3, -7)$ and is perpendicular to line A. Determine an equation for line B.

Line A has slope $m_1 = \frac{1}{5}$ Line B has slope $m_2 = -5$

Line B $y - (-7) = -5(x - 3)$

$$y + 7 = -5(x - 3) \text{ point-slope}$$

$$y + 7 = -5x + 15$$

$$y = -5x + 8 \text{ slope-intercept}$$

$$5x + y = 8 \text{ standard}$$